Part 1

Read each question. Select the correct answer.

1 A graph starts at the origin (0, 0). The horizontal axis is numbered in multiples of 2, and the vertical axis is numbered in multiples of 5. What ordered pair represents the values at a point that is 3 units to the right and 4 units up from the origin?

A. (6, 20)
B. (20, 6)
C. (3, 4)
D. (4, 3)

2 Simplify $x^3x^0x^{-5}$.

A. x^2
B. $\frac{1}{x^2}$
C. $\frac{1}{x^0}$
D. $\frac{x^5}{x^3}$

3 A triangle has sides $3m + 7p$, $5m - 2p$, and $-m + 2p$. What is the perimeter of the triangle?

A. $9m + 11p$
B. $7m + 7p$
C. $-7m + 7p$
D. $8m + 7p$

4 A rectangular box mailing box has a length in inches of $x + 5$, a width of $x + 1$, and a height twice as long at its width. What is the volume of the box in cubic inches?

A. $2x^3 + 12x^2 + 10x$
B. $2x^2 + 12x + 10$
C. $2x^3 + 14x^2 + 22x + 10$
D. $2x^3 + 22x^2 + 24x + 10$

5 Cassie mixes a sports drink and orange juice to make punch. She uses 5 bottles of sports drink and 3 bottles of orange juice. She spent a total of \$16.54 on the punch. The cost of one bottle of sports drink and one bottle of orange juice is \$4.02. Which system of equations represents the situation where x is the cost of a bottle of sports drink and y is the cost of a bottle of orange juice?

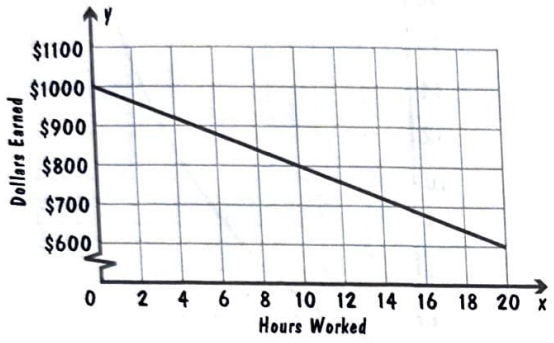
A. $\begin{cases} 5x + 3y = 16.54 \\ x + y = 4.02 \end{cases}$
B. $\begin{cases} 3x + 5y = 16.54 \\ x + y = 4.02 \end{cases}$
C. $\begin{cases} 3x + 5y = 4.02 \\ x + y = 16.54 \end{cases}$
D. $\begin{cases} 5x + 3y = 4.02 \\ x + y = 16.54 \end{cases}$

6 Tim donated 8 bags of fruit to the local foodbank. He donated bags of grapefruits and bags of oranges. There are 4 grapefruit in each bag of grapefruit and 6 oranges in each bag of oranges. He donated 42 grapefruit and oranges. The system of equations $\begin{cases} 4x + 6y = 42 \\ x + y = 8 \end{cases}$ represents the situation. Which of the following statements is true?

A. He donated 5 bags of grapefruit and 3 bags of oranges.
B. He donated 3 bags of grapefruit and 5 bags of oranges.
C. He donated 12 bags of grapefruit and 30 bags of oranges.
D. He donated 30 bags of grapefruit and 12 bags of oranges.

7 For the month of December, Rachael earns a bonus of $1,000 and an hourly wage of $20. Which graph represents Rachael's total earnings for the month of December?

A.



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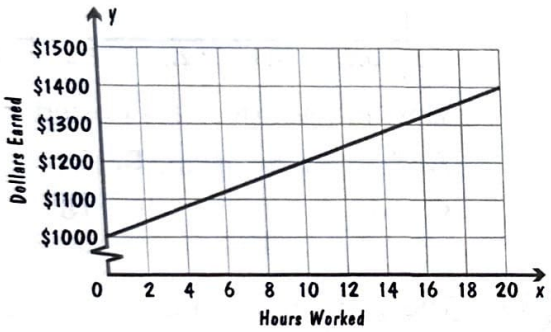

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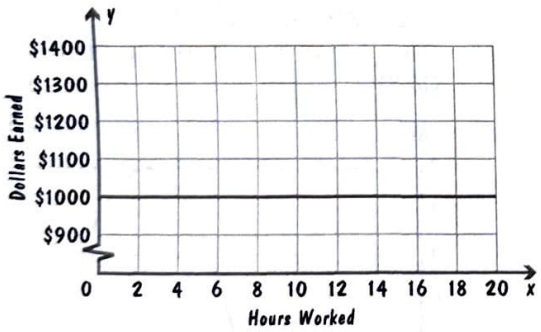
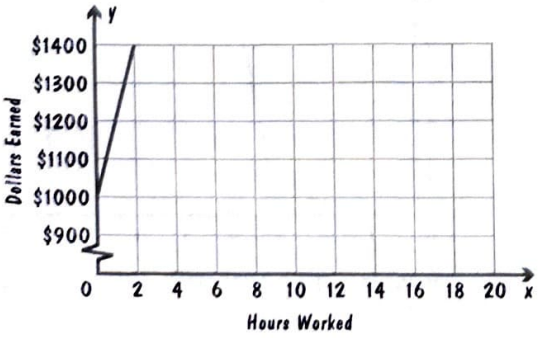
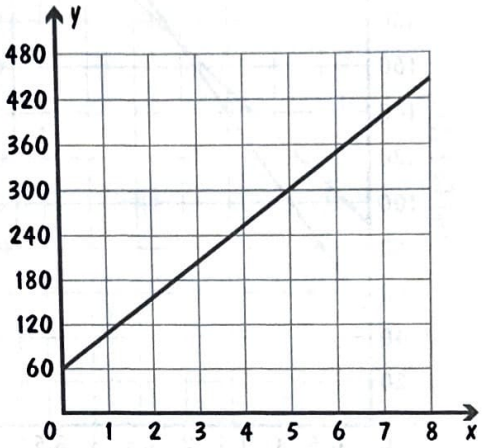


D.



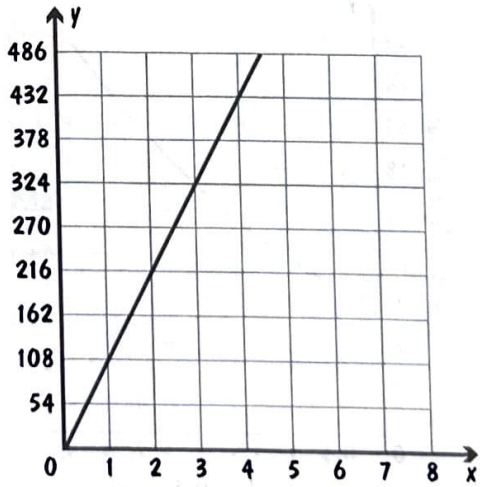
8 Mark swims 60 freestyle laps and 48 butterfly laps each day he has swim practice. Which graph represents the total number of laps he swims in x days of practice?

A.

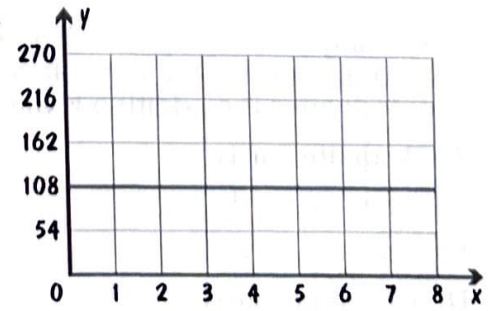


B.

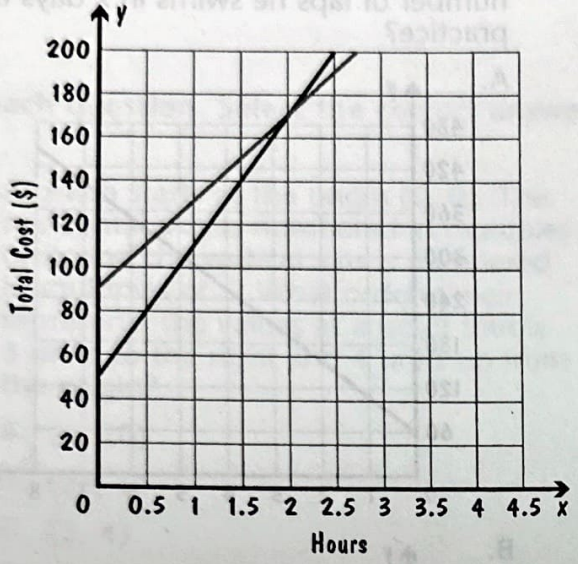
C.



D.



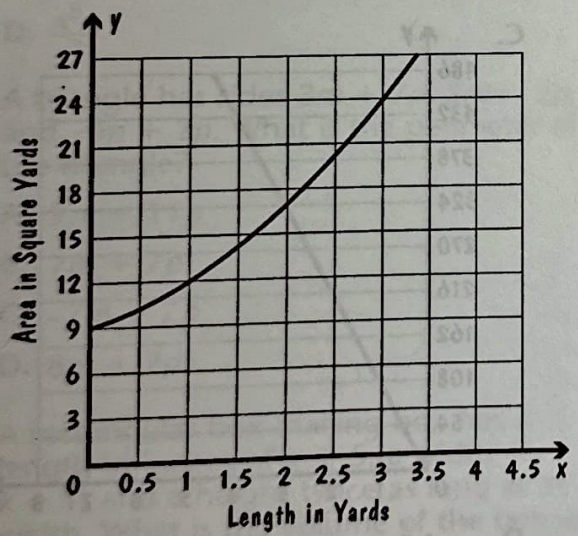
9 The graph displays the cost of hiring two different electricians to update the wiring in a house.



At how many hours is the cost of hiring either electrician the same?

Enter your response in the gridded area on the answer sheet.

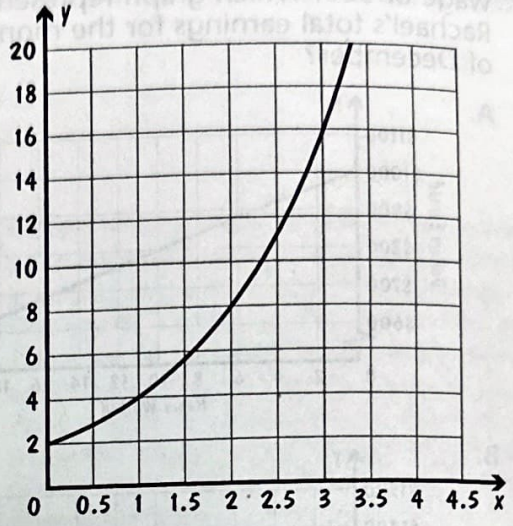
10 The graph shows the relationship between the length of an addition to a deck and its area in square yards.



According to the graph, which of the following represents a possible area for the deck after the addition is made?

A. 3 square yards
B. 4 square yards
C. 6 square yards
D. 14 square yards

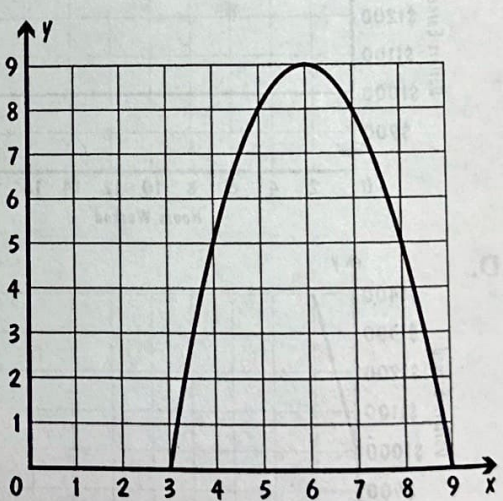
11 The graph shows the number of videos y posted to a website in x weeks.



How many videos are posted in 3 weeks?

A. 1
B. 3
C. 16
D. 18

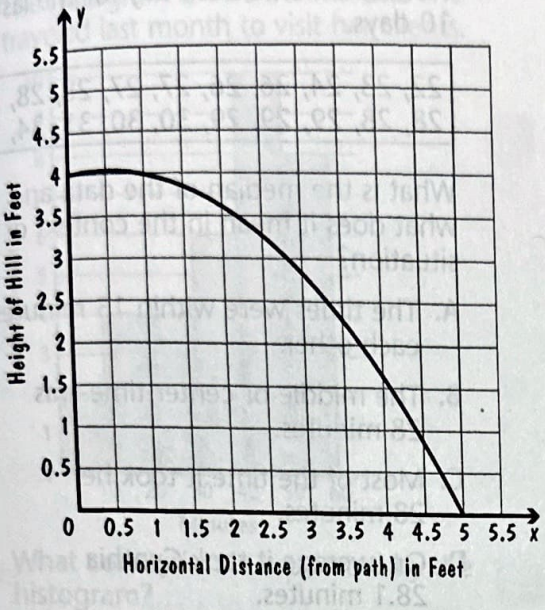
12 The graph represents the path of a water stream, showing the height in feet of the water coming from a sprinkler in the ground x feet from the entrance of a garden.



Based on the graph, which of the following statements is true?

A. The water stream reaches a maximum height of 6 feet.
B. If the sprinkler is 3 feet from the entrance, the water stream ends 9 feet from the entrance.
C. If the water stream is 4 feet high, the sprinkler is 5 feet from the entrance.
D. The water stream starts 3 feet high at the entrance.

13 The graph represents a side view of a steep man-made hill.



Based on the graph, which of the following statements is true?

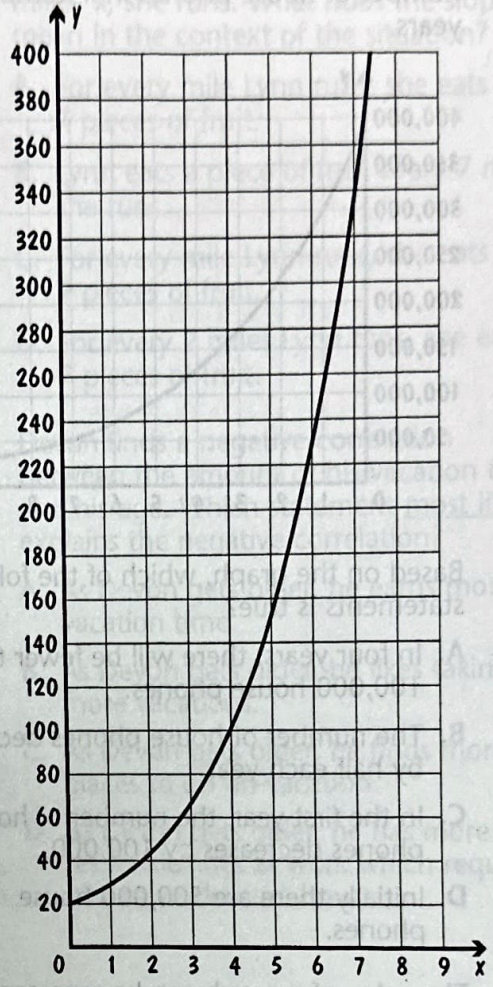
A. The man-made hill ends 5 feet from the path.

B. The hill reaches its maximum height 2 feet from the path.

C. The hill is 2 feet high 4 feet from the path.

D. The hill rises 1 foot per foot from the path.

14 The graph represents the total amount of money in dollars that Maria will donate to her favorite foundation x years from now.



Select the three true statements based on the graph.

A. Maria initially donates $20.

B. Next year she will increase the amount she donates by $30.

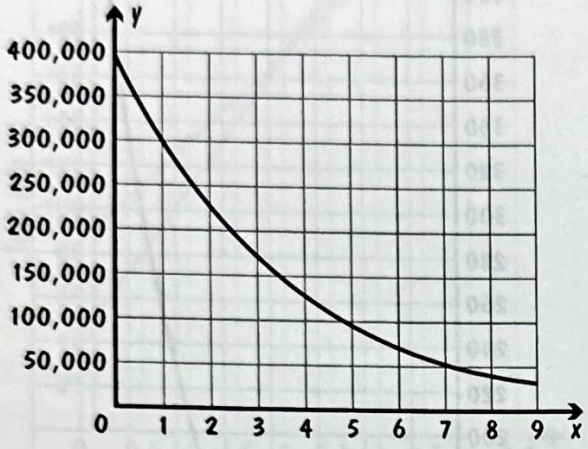
C. In 2 years, she will donate $15 more than her current donation.

D. Maria will donate over $100 in the fifth year.

E. In the sixth year, Maria will donate over $200.

F. Maria will donate over $400 in the seventh year.

15 The number of house phones for a certain city is expected to decrease exponentially each year. The graph shows the expected number of house phones in x number of years.



Based on the graph, which of the following statements is true?

A. In four years, there will be fewer than 100,000 house phones.

B. The number of house phones decreases by half each year.

C. In the first year, the number of house phones decreases by 100,000.

D. Initially there are 500,000 house phones.

16 The value of a couch can be represented by the function $f(x) = 2{,}500(0.84)^x$, where x represents the age of the couch. What does 0.84 in the equation represent?

A. an appreciation rate of 84%

B. a depreciation rate of 84%

C. an appreciation rate of 16%

D. a depreciation rate of 16%

17 The table shows the amount of time in minutes it took Cynthia to drive between work and home each day for the last 10 days.

22, 23, 24, 26, 26, 27, 27, 28, 28, 28, 28, 28, 29, 29, 29, 30, 30, 31, 34, 35

What is the median of the data and what does it mean in the context of the situation?

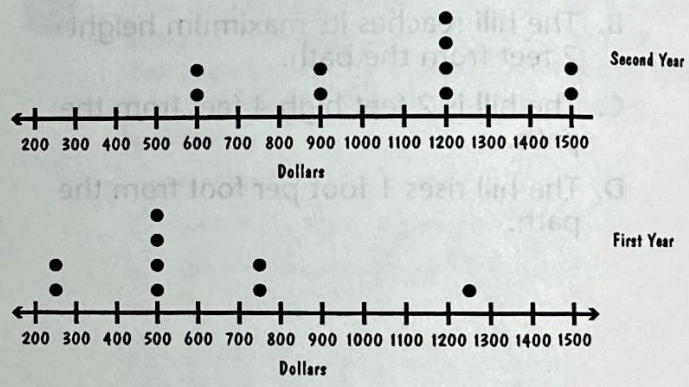
A. The times were within 13 minutes of each other.

B. The middle or center time was 28 minutes.

C. Most of the time it took her 28 minutes.

D. On average it took Cynthia 28.1 minutes.

18 Greg carves wood to create handmade desks. He made graphs of the selling prices of his desks for his first and second years of business.



Which conclusion is supported by the dot plots?

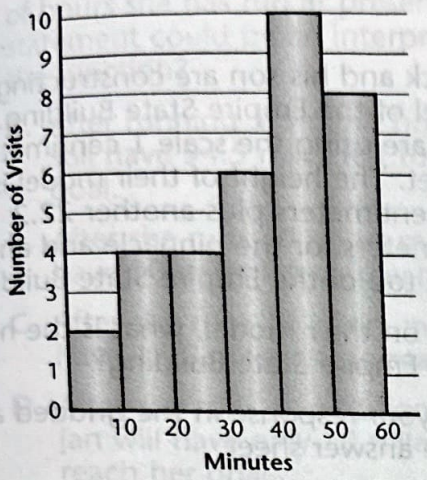
A. Overall, Greg sells more desks that are priced over $1,000.

B. The range of prices was greater in his second year than in his first year of business.

C. Overall most desks sold at $1,500.

D. Overall Greg sold desks at a greater price in the second year than in the first year.

19 Suzanne is a visiting veterinarian in an area where there are a lot of farms and ranches. The histogram shows the minutes she traveled last month to visit her clients.



What conclusion is supported by the histogram?

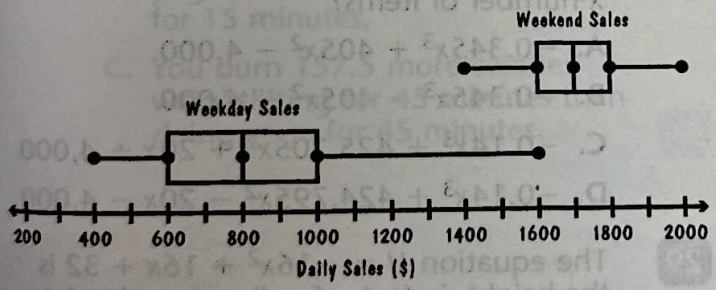
A. The distribution of the minutes is symmetrical about the interval 40–49 minutes.

B. The distribution of the minutes is skewed right.

C. The distribution of the minutes is skewed left.

D. The distribution of the minutes is bimodal.

20 Ellie created the box plots shown. They summarize the data she collected for the weekday and weekend sales for the past 4 months.



What conclusion is supported by the box plots?

A. The median is less for the weekday sales than for weekend sales.

B. On average, weekday sales are greater than weekend sales.

C. The range is greater for weekend sales than weekday sales.

D. The interquartile range is greater for weekend sales than weekday sales.

21 The linear equation $y = \frac{1}{7}x + 1$ models the relationship between the total pieces of fruit Lynn eats and the number of miles, x, she runs. What does the slope mean in the context of the situation?

A. For every mile Lynn runs, she eats 7 pieces of fruit.

B. Lynn eats a piece of fruit every 7 miles she runs.

C. For every mile Lynn runs, she eats 2 pieces of fruit.

D. For every 2 miles Lynn runs, she eats 7 pieces of fruit.

22 Devon finds a negative correlation between the amount of his vacation time and his age. Which statement most likely explains the negative correlation?

A. As Devon gets older, he earns more vacation time.

B. As Devon gets older, he likes taking more vacations.

C. As Devon gets older, he finds more places to go on vacation.

D. As Devon gets older, he has more responsibilities at work which require him to work more hours.

Part 2

Read each question. Select the correct answer. You may use a calculator on Part 2.

23 Ally needs to buy a gallon of milk. She can buy a gallon of milk for $4.20, a quart for $1.25, a pint for 50 cents, or 8 fluid ounces for 38 cents.

1 gallon = 4 quarts
1 quart = 2 pints
1 pint = 2 cups
1 cup = 8 fluid ounces

Which of the following statements is true?

A. Buying by the gallon is the least expensive.
B. Buying by the quart is the least expensive.
C. Buying by the pint is the least expensive.
D. Buying by fluid ounces is the least expensive.

24 A wooden board measures 12 feet long and costs $27.30. What is the cost per yard of the wood? 1 yd = 3 ft

A. $9.10
B. $13.65
C. $4.55
D. $6.83

25 Sofia measures one leg of a right triangle as 2.08 inches and the other leg of the right triangle as 0.53 inches. She then uses the Pythagorean Theorem ($a^2 + b^2 = c^2$) to calculate the length of the hypotenuse.

How should she write the length of the hypotenuse in inches?

A. 2 inches
B. 2.15 inches
C. 2.1465 inches
D. 2.146462206 inches

26 Dereck and his son are constructing a model of the Empire State Building. They are using the scale 1 centimeter = 10 feet. The height of their model is 125 centimeters plus another 22.2 centimeters for the pinnacle and antenna at the top of the Empire State Building.

Based on their model, what is the height of the Empire State Building?

Enter your response in the gridded area on the answer sheet.

27 Evaluate $\sqrt[3]{125m^5n^7x^3}$ to find the side length in meters of a cube given its volume. What is the side length of the cube?

A. $5mn^2x$ meters
B. $5mn^2x\sqrt[3]{m^2n}$ meters
C. $5m^2n^3x\sqrt[3]{5m^2n}$ meters
D. $25m^2n^3x\sqrt[3]{mnx}$ meters

28 The revenue from selling x number of items is modeled by the polynomial $425x^2 - 0.14x^3$. The cost of producing x number of items is $0.205x^2 + 20x + 4000$. Which polynomial models the profit from producing and selling x number of items?

A. $-0.345x^3 + 405x^2 - 4{,}000$
B. $-0.345x^3 - 405x^2 - 4{,}000$
C. $-0.14x^3 + 425.205x^2 + 20x + 4{,}000$
D. $-0.14x^3 + 424.795x^2 - 20x - 4{,}000$

29 The equation $H = -16x^2 + 16x + 32$ is the height, in feet, of a diver jumping into the air from a cliff 32 feet above the water x seconds after jumping. How long was the diver in the air before hitting the water?

A. 0.5 second
B. 1 second
C. 2 seconds
D. 4 seconds

30 The function $f(x) = 100 - 5.5x$ models the total number of miles left for Jan to meet her goal of running 100 miles this month, and x is the total number of hours she has run at present. Which statement could be an interpretation of the function?

A. After running 5.5 more hours, Jan will still have 94.5 miles left to reach her goal.

B. After she runs 10 hours more, Jan will have 90 miles left to reach her goal.

C. After she runs 15 hours more, Jan will have 17.5 miles left to reach her goal.

D. After she runs an additional 20 hours, Jan will have only 10 miles left to reach her goal.

31 The function $f(x) = -0.2x^3 + 2.4x^2 - 4x + 12$ models the total number of paintings Ronald completes in x months. What is the average rate of change between months 2 and 7?

A. $\frac{21}{5}$

B. $\frac{5}{21}$

C. $-\frac{5}{21}$

D. $-\frac{21}{5}$

32 The table is for the function $y(x)$, which gives the total number of calories burned doing yoga for x number of minutes.

x (minutes)	15	30	45	60
$y(x)$ (total calories)	89	178	267	356

The function $w(x) = 4.5x$ gives the total number of calories burned weightlifting for x number of minutes.

Both functions define the relationship between time and calories for a person weighing 185 pounds. Which statement is true for the functions $y(x)$ and $w(x)$?

A. You burn 10.5 more calories doing yoga for 15 minutes than weightlifting for 15 minutes.

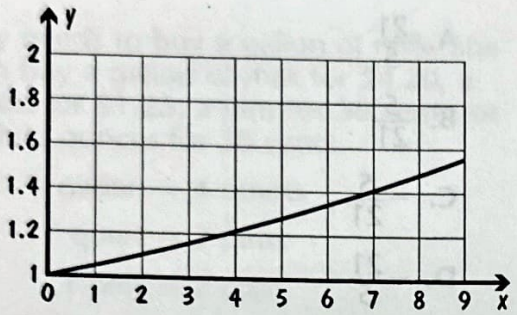
B. You burn 105 more calories weightlifting for 30 minutes than doing yoga for 30 minutes.

C. You burn 157.5 more calories weightlifting for 45 minutes than doing yoga for 45 minutes.

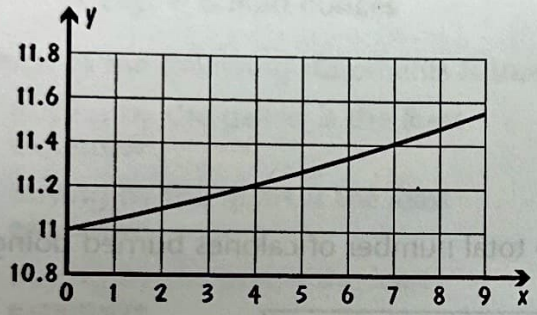
D. You burn 86 more calories doing yoga for 60 minutes than weightlifting for 60 minutes.

33 Which graph models the predicted price in dollars of an item x years from now when the item currently costs \$10 and has an expected annual rate of inflation of 5%?

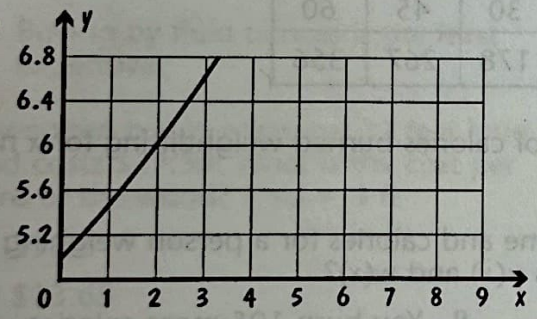
A.



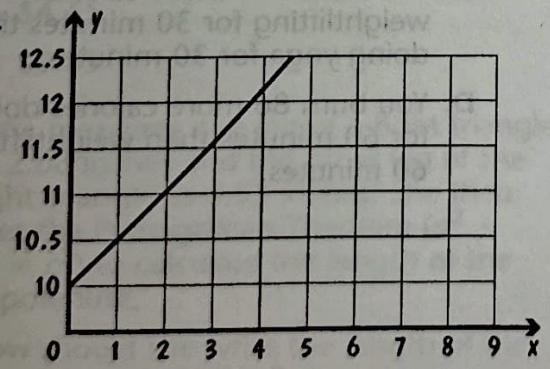
B.



C.



D.



34 A survey asked employees how many hours they worked last week. The results are shown in the frequency table.

	Worked under 20 Hours	Worked 20–40 Hours	Worked over 40 Hours
Women under 30	6	12	31
Women 30 and older	2	11	36
Men under 30	4	16	28
Men 30 and older	2	10	39

Based on the data, which of the following statements are true?

A. Women under 30 are most likely working between 20 and 40 hours.

B. Men under 30 most likely work under 20 hours.

C. Only women and men over 30 are most likely to work over 40 hours.

D. About 34% of those surveyed are women who work over 40 hours.

35 Samantha is drawing the center circle with a diameter of 12 feet for a basketball court. She has completed $\frac{1}{3}$ of the circle. What is the approximate arc length of the circle she still has to draw? Use 3.14 for π.

A. 6.3 feet

B. 12.6 feet

C. 25.1 feet

D. 50.3 feet

36 Patrick measured his son's shadow and determined it was 56 inches. Then his son measured his dad's shadow and determined it was 105 inches. If Patrick is 75 inches tall, how tall is his son?

A. 22 inches

B. 37.5 inches

C. 40 inches

D. 78.4 inches

37 The Great Pyramid of Giza has a square base. It has a height of 147 meters and a volume of approximately 2,592,100 cubic meters. What is the approximate length of each side of its base?

A. 77 meters

B. 230 meters

C. 2,939 meters

D. 26,450 meters

38 A cylinder has a diameter of 30 meters and is 45 meters high. What is the volume of the cylinder?

A. $10{,}125\pi$ cubic meters

B. 900π cubic meters

C. 225π cubic meters

D. $40{,}500\pi$ cubic meters

39 The sphere called the Grand Kugel, located in Richmond, Virginia, has an approximate volume of 348 cubic feet. What is the approximate diameter of the sphere? Use 3.14 for π.

A. 4.36 feet

B. 8.72 feet

C. 27.69 feet

D. 55.39 feet

40 Alaska is the least densely populated state at 1.3 people per square mile. New Jersey is the most densely populated state at 1,210 people per square mile. Alaska has a land area of 570,641 square miles and New Jersey has a land area of 7,354 square miles. Which statement is true?

A. The difference in Alaska's and New Jersey's population is about 8,156,507.

B. You are more likely to see a person in Alaska than New Jersey flying in a helicopter.

C. Alaska's population is greater than New Jersey's population.

D. Alaska's land area is less than New Jersey's land area.

5. **D.** Substitute the values into the formula, $25 = \frac{525{,}000}{\text{area}}$. Multiply both sides of the equation by the unknown area and divide both sides by 25 for a solution of 21,000 square miles.

6. **C.** Find the volume for one brick ($5 \times 10 \times 15 = 750$). Substitute: $0.00192 = \frac{M}{750}$. Find the mass for one brick: $(0.00192) \times (750) = 1.44$ and multiply by 250 bricks to get 360. An alternate method is to find the total volume for the bricks, $V = 250(5)(10)(15) = 187{,}500$. Then, substitute the density and volume into the density formula, $0.00192 = \frac{M}{187{,}500}$. Multiply both sides of the equation by 187,500, and the result is 360 kilograms.

7. **C.** There are 2,000 pounds in a ton, so there are 16,000 pounds in 8 tons. Then, substitute the density and mass into the density formula, $62.4 = \frac{16{,}000}{V}$. Multiply both sides of the equation by V and divide both sides of the equation by 62.4 to obtain a solution of about 256.41 cubic feet.

8. **B.** Substitute the density and mass into the density formula, $11.3 = \frac{50}{V}$. Multiply both sides of the equation by V and divide both sides of the equation by 11.3 to obtain a solution of about 4.42 cubic centimeters.

9. **B.** The radius is one half of the diameter, or 3 centimeters. The population density is the number of bacteria divided by the area of the petri dish.

$$\frac{25{,}000}{3.14(3)^2(1)} = \frac{25{,}000}{3.14(9)(1)} = \frac{25{,}000}{28.26} \approx 885$$

Unit 6 Review: Geometry

1. **D.** A flashlight is most like a ray because it has a starting point and then continues on indefinitely. G.CO.1

2. **B.** Two line segments that do not intersect might be parallel if the lines that they are a part of are parallel. They might not be parallel if the lines they are a part of do intersect or coincide. G.CO.1

3. **C.** Since the bike path bisects a 90° angle, two 45° angles are created on either side of the bike path. G.CO.1

4. **B.** Arc length $= \frac{1}{4}(2)(3.14)(6) \approx 9.42$. G.CO.1

5. **A.** The marks on the drawing tell you that two sides and the included angle of one triangle are congruent to the corresponding parts of the second triangle, so by SAS the triangles are congruent. G.SRT.5

6. **C.** $\frac{21}{63} = \frac{84}{x}$; $x = 252$; $252 \div 12 = 21$. G.SRT.5

7. **D.** $15{:}6 = 20{:}x$ G.SRT.5

8. **D.** $48 = \frac{h}{3}(6)(6)$; $48 = 12h$; $4 = h$ G.GMD.3

9. **B.** $\frac{1}{3}(345)(345)\ (190) = 7{,}538{,}250$. G.GMD.3

10. **C.** $(3.14)\left(\frac{6.2}{2}\right)^2(34.1) \approx 1{,}029$. G.GMD.3

11. **A.** $(3.14)\left(\frac{5.5}{2}\right)^2 h = 1{,}188$; $h \approx 50$

$(3.14)\left(\frac{5.6}{2}\right)^2 h = 1{,}404$; $h \approx 57$;

$57 - 50 = 7$. G.GMD.3

12. **C.** $V = \frac{4}{3}\pi 3^3 = \frac{4}{3}\pi 27 = 36\pi$ G.GMD.3

13. **C.** $\frac{4}{3}\left(\frac{96}{2}\right)^3(3.14) \div 2 \approx 231{,}506$.

G.GMD.3

14. **D.** $\frac{4}{3}\left(\frac{54}{2}\right)^3(3.14) - \frac{4}{3}\left(\frac{40}{2}\right)^3(3.14) \approx 48{,}913$.

G.GMD.3

15. **A.** $\frac{1}{3}\left(\frac{6}{2}\right)^2(3.14)(4) - \frac{1}{3}\left(\frac{4}{2}\right)^2(3.14)\ (3) \approx 25.12$.

G.GMD.3

16. **C.** $302 = \frac{1}{3}(6)^2\ (3.14)\ h$; $h \approx 8$ G.GMD.3

17. **D.** $150.3 \times 50{,}090{,}000 \approx 7.5$ billion and $73.6 \times 50{,}090{,}000 \approx 3.7$ billion, 7.5 billion − 3.7 billion = 3.8 billion. G.MG.2

18. **C.** (14)(9)(5) = 630 cubic feet. $2.25 = \frac{M}{630}$. $M = 1{,}417.5$ pounds. G.MG.2

Level A Practice Test

Part 1

1. **A.** On the horizontal axis, or x, $3(2) = 6$. On the vertical axis, or y, $4(5) = 20$. The x-coordinate is always the first of the ordered pair that names a point. N.Q.1

2. **B.** Add the exponents and then write x^{-2} in simplest form as $\frac{1}{x^2}$. A.SSE.2

3. **B.** Add the three sides to find the perimeter, and then combine like terms: $3m + 5m + (-1m) + 7p + (-2p) + 2p = 7m + 7p$. A.APR.1

4. **C.** $(x + 5) \times (x + 1) \times 2(x + 1) = (x^2 + 6x + 5)(2x + 2) = 2x^3 + 12x^2 + 10x + 2x^2 + 12x + 10 = 2x^3 + 14x^2 + 22x + 10$. A.APR.1

5. **A.** The sum of 5 bottles of sports drink and 3 bottles of orange juice times the price of each equals the total cost of $16.54. The price of 1 bottle of sports drink plus the price of 1 bottle of orange juice equals the total cost of $4.02. A.CED.2, A.CED.3

6. **B.** Solve for y in the second equation: $x + y = 8 \rightarrow y = 8 - x$. Substitute this expression for y into the first equation and solve for x: $4x + 6(8 - x) = 42 \rightarrow x = 3$ bags of grapefruit. Substitute this value of x into the second equation and solve for y. $x + 5 = 8$, and $y = 5$ (number of bags of oranges). A.REI.6

7. **B.** The situation is represented by the graph of $y = 20x + 1000$. The graph has a positive slope and a y-intercept of 1,000. A.CED.1, F.IF.7

8. **C.** The situation is represented by the graph of $y = (60 + 48)x$. The graph has a y-intercept of 0 and a unit rate represented by the point (1, 108). A.CED.1, F.IF.7

9. **2** The graphed lines of the system of equations intersect at $x = 2$. A.REI.6

10. **D.** The y-values of the graph show the possible areas. The range, or set of y-values, is greater than or equal to 9. A.REI.10

11. **C.** According to the graph when x is 3, y is 16. A.REI.10

12. **B.** The points (3, 0) and (9, 0) are located on the graph. A.CED.1, A.SSE.3.a, F.IF.4, F.IF.7

13. **A.** The point (5, 0) is located on the graph. A.CED.1, A.SSE.3.a, F.IF.4, F.IF.7

14. **A, D, E.** At $x = 0$, $y = 20$. At $x = 5$, y is about 152. At $x = 6$, y is about 230. A.CED.1, F.IF.8.b, F.LE.1.c, F.IF.7

15. **C.** The points (0, 400,000) and (1, 300,000) are located on the graph. $400{,}000 - 300{,}000 = 100{,}000$. A.CED.1, F.IF.8.b, F.LE.1.c, F.IF.7

16. **D.** In an exponential decay situation, a 16% depreciation rate can be represented in the exponential equation as $1 - 0.16 = 0.84$. F.LE.5

17. **B.** When all the data points are listed in order, there are 10 points below 28 and 10 points above 28. The median of the data is 28. S.ID.3

18. **D.** Most of the data on the dot plot for the second year is located to the right of the data on the dot plot for the first year. S.ID.1, S.ID.3

19. **C.** A long tail to the left, with more data spread out on that side of center, means the data is skewed left. S.ID.1, S.ID.3

20. **A.** The median for weekday sales is about \$800, and the median for weekend sales is about \$1,700. S.ID.1, S.ID.3

21. **B.** Since the slope is $\frac{1}{7}$, Lynn eats 1 piece of fruit (y) for every 7 miles she runs (x). S.ID.7

22. **D.** A negative correlation means that as Devon ages, he takes less vacation time. S.ID.9

Part 2

23. **C.** Determine the price per gallon for each size: 4.20 (gallon), $4 \times 1.25 = 5.00$ (quart), $8 \times 0.50 = 4.00$ (pint), and $0.38 \times (128 \div 8) = 6.08$ (8 fluid ounces). N.Q.1

24. **D.** There are 3 feet in 1 yard, so 12 feet = 4 yards. The price $\$27.30 \div 4 = 6.825$ which rounds to \$6.83. N.Q.1

25. **B.** $2.08^2 + 0.53^2 = 4.3264 + .2809 = 4.6073$. The square root of 4.6073 is 2.146462206. Since the measurements are given to the hundredth place, the answer cannot be more accurate than that. Rounding 2.146462206 the nearest hundredth gives 2.15 since 6 (in the thousandth place) is ≥ 5. N.Q.3

26. **1472** $125 + 22.2 = 147.2$; $147.2 \times 10 = 1{,}472$ N.Q.1

27. **B.** Rewrite the radicand to isolate terms with the power of 3, and take the root of each of these:

$$\sqrt[3]{5^3m^3m^2n^3n^3nx^3} = 5mn^2x\sqrt[3]{m^2n}.$$ N.RN.2

28. **D.** Subtract and combine like terms: $-0.14x^3 + (425x^2 - 0.205x^2) - 20x - 4{,}000 = -0.14x^3 + 424.795x^2 - 20x - 4{,}000$. A.APR.1

29. **C.** You can either solve with the quadratic formula: $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$ or find the zeroes by factoring and setting each factor equal to zero and solving for the x-intercepts. $-16(x - 2)(x + 1) = 0$. The solutions to the quadratic equation are 2 and -1. In the context of this problem, $x = 2$. The diver was in the air for 2 seconds. A.REI.4, F.IF.4

30. **C.** $f(15) = 100 - 5.5(15) = 17.5$ F.IF.2

31. **A.** The average rate of change between two points is $\frac{\text{change in } y}{\text{change in } x}$ for the two points. $(7) = -0.2(7^3) + 2.4(7^2) - 4(7) + 12 = 33$ and $f(2) = -0.2(2^3) + 2.4(2^2) - 4(2) + 12 = 12$. The change in y, or $f(x)$ is $33 - 12$ and the change in x is $7 - 2$. $\frac{33 - 12}{7 - 2} = \frac{21}{5}$ F.IF.6

32. **D.** Add a third row to the table for $w(x)$ by multiplying the minutes in the first row by 4.5 to get four values for $w(x)$. Then subtract in each column to find $y(x) - w(x)$. $w(60) = 4.5(60) = 270$; $356 - 270 = 86$. F.IF.9

33. **D.** Use the formula for exponential growth: $f(x) = a(1 + r)^x$. When the year, x, equals 0, $f(x) = 10(1 + 0.05)^0$. When $x = 1$, then $f(x) = 10(1 + 0.05)^1$. The points (0, 10) and (1, 10.5) must be on the graph. A.CED.1, F.IF.8.b, F.LE.1.c, F.IF.7

34. **D.** $\frac{31 + 36}{197} \approx 0.34$ S.ID.5

35. **C.** $\frac{2}{3}\left(2\pi\left(\frac{12}{2}\right)\right) \approx 25.1$ G.CO.1

36. **C.** $\frac{56}{x} = \frac{105}{75}$; $x = 40$ G.SRT.5

37. **B.** $\frac{1}{3}l^2(147) = 2{,}592{,}100$; $l^2 = 52{,}900$; $l = 230$. G.GMD.3

38. **A.** $(45)\left(\frac{30}{2}\right)^2\pi = 10{,}125\pi$. G.GMD.3

39. **B.** $348 = \frac{4}{3}(3.14)r^3$, $83.12 = r^3$, $r \approx 4.362$, $4.362 \times 2 \approx 8.72$ G.GMD.3

40. **A.** $1.3 \times 570{,}641 = 741{,}833$ and $1{,}210 \times 7{,}354 = 8{,}898{,}340$. $8{,}898{,}340 - 741{,}833 = 8{,}156{,}507$. G.MG.2

Instructions: Use the Answers and Explanations starting on page 202 to check your answers to the Practice Test. Then, place an X next to the item numbers you missed. Review the lessons identified for any missed items.

Practice Test Item	Correct/ Incorrect	For incorrect items, review the following lesson
1		Lesson 3
2		Lesson 7
3		Lesson 9
4		Lesson 11
5		Lesson 14, 15
6		Lesson 19
7		Lesson 20
8		Lesson 21
9		Lesson 21
10		Lesson 24
11		Lesson 26
12		Lesson 26
13		Lesson 28
14		Lesson 28
15		Lesson 29
16		Lesson 30
17		Lesson 31
18		Lesson 32
19		Lesson 33
20		Lesson 34

Practice Test Item	Correct/ Incorrect	For incorrect items, review the following lesson
21		Lesson 35
22		Lesson 37
23		Lesson 38
24		Lesson 1
25		Lesson 2
26		Lesson 4
27		Lesson 3
28		Lesson 8
29		Lesson 10
30		Lesson 18, 28
31		Lesson 26
32		Lesson 27
33		Lesson 29
34		Lesson 36
35		Lesson 42
36		Lesson 44
37		Lesson 45
38		Lesson 46
39		Lesson 47
40		Lesson 49